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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/574,718

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Hong-Jae Lee

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EXAMINER

SZEWCZYK, CYNTHIA

ART UNIT

PAPER NUMBER

1791

MAIL DATE

DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/574,718	Applicant(s) LEE ET AL.	
	Examiner CYNTHIA SZEWCZYK	Art Unit 1791	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 July 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 13-41 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 13-41 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on July 31, 2009 has been entered.

Claim Rejections - 35 USC § 102

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

3. Claims 13, 15, 17, and 39 are rejected under 35 U.S.C. 102(b) as being anticipated by YARWOOD et al. (US 4,075,303).

YARWOOD teaches a method of preparing ceramic foam. YARWOOD teaches that the polymer sponge undergoes an impregnation step (col. 2, lines 33-39) in a slurry comprising an inorganic adhesive (col. 5, lines 23-26). YARWOOD teaches that excess slurry is expelled from sponge (col. 2, lines 40-42) in what is considered the dewatering step. YARWOOD discloses that the sponge is coated in the slurry (col. 4, lines 53). YARWOOD discloses that the polymer sponge is porous (col. 1, lines 14-15); therefore, it is inherent that removing excess slurry from the sponge would result in open pores. YARWOOD teaches that the sponge undergoes a drying step to cure the slurry (col. 2,

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lines 44-47). YARWOOD teaches that the sponge does not have to be further heated for sintering (col. 2, lines 47-49).

Regarding claim 15, YARWOOD teaches that the slurry contains silicates such as sodium or potassium silicate (col. 5, lines 23-26).

Regarding claim 17, YARWOOD teaches the slurry may contain organic adhesives (col. 5, lines 33-38).

Regarding claim 39, see the discussion of instant claim 13. Since YARWOOD teaches the method of instant claim 13, it is inherent that it would produce the same product as the instant invention.

Claim Rejections - 35 USC § 103

4. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

5. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over YARWOOD et al. (US 4,075,303).

YARWOOD discloses a method for producing porous ceramic structures. YARWOOD is silent to disclosing that the impregnating, dewatering, and drying steps are performed several times. It would have been obvious to one of ordinary skill in the art to perform the steps several times because a person of ordinary skill in the art would have known that it would have caused increased impregnation into the sponge, which would have been a desirable result. Therefore, the claimed invention would have been obvious.

6. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over YARWOOD et al. (US 4,075,303) in view of YASUDA et al. (US 3,886,100).

YARWOOD discloses a method for producing porous ceramic structures. YARWOOD is silent to disclosing a surfactant mixed with the adhesive. YASUDA et al. discloses a method of manufacturing polymer particles cross-linked uniformly by impregnating a cross-linking agent into polymer particles. YASUDA et al. discloses that a surfactant is added to the impregnation solution in order to add the solution homogenously to the polymer (col. 4, lines 13, 42-44). It would have been obvious to one of ordinary skill in the art to add a surfactant to the adhesive of YARWOOD to ensure that the adhesive would have been dispersed homogenously during the impregnation.

7. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over YARWOOD et al. (US 4,075,303) in view of JIN (US 6,296,699 B1).

YARWOOD discloses a method for producing porous ceramic structures. YARWOOD is silent to disclosing either sodium silicofluoride or magnesium sulfate mixed with the adhesive. JIN discloses that sodium silicofluoride is a known hardener for use with alkali metal silicates (col. 6, lines 67 – col. 7, lines 1-6). Since the adhesive in YARWOOD is potassium or sodium silicate, it would have been obvious that adding sodium silicofluoride would have added strength to the ceramic structure produced by YARWOOD. Therefore, the claimed invention would have been obvious.

8. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over YARWOOD et al. (US 4,075,303) in view of BOUTLE (US 4,157,424).

YARWOOD discloses a method for producing porous ceramic structures. YARWOOD is silent to with a water repellant mixed with the adhesive. BOUTLE discloses a method for producing porous materials. BOUTLE discloses that a surface active agent may affect the ability of a porous body to become wetted by liquids (col. 4, lines 23-27). It would have been obvious to one of ordinary skill in the art to add water repellant to the adhesive mixture of YARWOOD in order to make the ceramic hydrophobic. This would produce a ceramic product that would be ideal for use in water. Therefore, the claimed invention would have been obvious.

9. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over YARWOOD et al. (US 4,075,303) in view of CROOKE et al. (US 4,332,753).

YARWOOD discloses a method for producing porous ceramic structures. YARWOOD is silent to mixing a phosphate with the adhesive. CROOKE et al. discloses a method of making a porous refractory material. CROOKE discloses that a sponge is impregnated with a suspension of refractory material, then squeezed to remove excess suspension and finally allowed to dry (col. 1, lines 8-15). CROOKE et al. discloses that suitable sponge can be composed of polyurethane (col. 2, lines 14-16) as in YARWOOD. CROOKE et al. discloses that the impregnation suspension can have a phosphate additive to produce temporary or permanent bonds and impart desirable

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properties such as thixotropy, wetting ability, and mould resistance (col. 2, lines 22-26).

It would have been obvious to one of ordinary skill in the art to add phosphate in order to improve the thixotropy, which is a desired property in YARWOOD (col. 5, lines 33-36).

10. Claim 21- 23, 29, and 40 is rejected under 35 U.S.C. 103(a) as being unpatentable over YARWOOD et al. (US 4,075,303) in view of TANSILL (US 4,272,898) and FUMA et al. (US 4,623,499).

YARWOOD discloses a method for producing porous ceramic structures wherein the polyurethane foam is impregnated with a slurry of sodium or potassium silicate (col. 5, lines 23-26). YARWOOD is silent to adding a curing agent into the pores of the sponge. TANSILL discloses a resin-coated fiber mass containing catalyst-filled hollow fibers. TANSILL discloses that a liquid curing agent can be impregnated into the pores of a polyurethane foamed material (col. 10, lines 48-54). It would have been to one of ordinary skill in the art to add curing agent into the sponge of YARWOOD because it would have helped solidify the product. YARWOOD as modified by TANSILL is silent to a gaseous curing agent.

FUMA et al. discloses a method for manufacture of a shaped article of organic substance. FUMA et al. discloses that a gaseous curing agent can be passed through a structure to aid curing and encourage solidification (abstract). It would have been obvious to one of ordinary skill in the art that a gaseous curing agent could be used as the curing agent of TANSILL because a gaseous curing agent would fit into smaller

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pores easier. It would have been obvious to one of ordinary skill in the art to insert a gaseous into the pores of YARWOOD because that would have helped solidify the product.

Regarding claims 22 and 29, it would have been obvious to one of ordinary skill in the art to perform the steps several times because a person of ordinary skill in the art would have known that it would have caused increased impregnation into the sponge, which would have been a desirable result.

Regarding claim 23, YARWOOD teaches that the slurry contains silicates such as sodium or potassium silicate (col. 5, lines 23-26).

Regarding claim 25, YARWOOD teaches the slurry may contain organic adhesives (col. 5, lines 33-38).

Regarding claim 40, see the discussion of claim 21 above.

11. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over YARWOOD et al. (US 4,075,303) in view of TANSILL (US 4,272,898) and FUMA et al. (US 4,623,499) as applied to claims 21- 23, 29, and 40 above, and further in view of YASUDA et al. (US 3,886,100).

YARWOOD as modified by TANSILL and FUMA et al. discloses a method for producing porous ceramic structures. Modified YARWOOD is silent to disclosing a surfactant mixed with the adhesive. YASUDA et al. discloses a method of manufacturing polymer particles cross-linked uniformly by impregnating a cross-linking agent into polymer particles. YASUDA et al. discloses that a surfactant is added to the

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impregnation solution in order to add the solution homogenously to the polymer (col. 4, lines 13, 42-44). It would have been obvious to one of ordinary skill in the art to add a surfactant to the adhesive of modified YARWOOD to ensure that the adhesive would have been dispersed homogenously during the impregnation. Therefore, the claimed invention would have been obvious.

12. Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over YARWOOD et al. (US 4,075,303) in view of TANSILL (US 4,272,898) and FUMA et al. (US 4,623,499) as applied to claims 21- 23, 29, and 40 above, and further in view of JIN (US 6,296,699 B1).

YARWOOD as modified by TANSILL and FUMA et al. discloses a method for producing porous ceramic structures. Modified YARWOOD is silent to disclosing either sodium silicofluoride or magnesium sulfate mixed with the adhesive. JIN discloses that sodium silicofluoride is a known hardener for use with alkali metal silicates (col. 6, lines 67 – col. 7, lines 1-6). Since the adhesive in modified YARWOOD is sodium or potassium silicate, it would have been obvious to one of ordinary skill in the art that adding sodium silicofluoride would have added strength to the ceramic structure produced by modified YARWOOD. Therefore, the claimed invention would have been obvious.

13. Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over YARWOOD et al. (US 4,075,303) in view of TANSILL (US 4,272,898) and FUMA et al.

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(US 4,623,499) as applied to claims 21- 23, 29, and 40 above, and further in view of BOUTLE (US 4,157,424).

YARWOOD as modified by TANSILL and FUMA et al. discloses a method for producing porous ceramic structures. Modified YARWOOD is silent to disclosing a water repellant mixed with the adhesive. BOUTLE discloses a method for producing porous materials. BOUTLE discloses that a surface active agent may affect the ability of a porous body to become wetted by liquids (col. 4, lines 23-27). It would have been obvious to one of ordinary skill in the art to add water repellant to the adhesive mixture of modified YARWOOD in order to make the ceramic hydrophobic. This would produce a ceramic product that would be ideal for use in water. Therefore, the claimed invention would have been obvious.

14. Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over YARWOOD et al. (US 4,075,303) in view of TANSILL (US 4,272,898) and FUMA et al. (US 4,623,499) as applied to claims 21- 23, 29, and 40 above, and further in view of CROOKE et al. (US 4,332,753).

YARWOOD as modified by TANSILL and FUMA et al. discloses a method for producing porous ceramic structures. Modified YARWOOD is silent to mixing phosphate with the adhesive. CROOKE et al. discloses a method of making a porous refractory material. CROOKE discloses that a sponge is impregnated with a suspension of refractory material, then squeezed to remove excess suspension and finally allowed to dry (col. 1, lines 8-15). CROOKE et al. discloses that suitable sponge

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can be composed of polyurethane (col. 2, lines 14-16) as in modified YARWOOD.

CROOKE et al. discloses that the impregnation suspension can have a phosphate additive to produce temporary or permanent bonds and impart desirable properties such as thixotropy, wetting ability, and mould resistance (col. 2, lines 22-26). It would have been obvious to one of ordinary skill in the art to add phosphate in order to improve the thixotropy, which is a desired property in modified YARWOOD (YARWOOD col. 5, lines 33-36).

15. Claims 30-32, 34, 38 and 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over YARWOOD et al. (US 4,075,303) in view of ANDERSSON (US 4,483,889).

YARWOOD discloses a method for producing porous ceramic structures wherein the polyurethane foam is impregnated with a slurry of sodium or potassium silicate (col. 5, lines 23-26). YARWOOD is silent to disclosing that a curing agent is combined with the adhesive or that the process is repeated. ANDERSSON discloses a method for the production of fibre composite materials impregnated with resin. ANDERSSON discloses that conventional additives can be used in the impregnation solution, such as curing catalysts (col. 4, lines 42-44). It would have been obvious to one of ordinary skill in the art to add a curing agent to the adhesive mixture of YARWOOD because it would provide better control of the curing process.

Regarding claim 31, it would have been obvious to one of ordinary skill in the art to perform the steps several times because a person of ordinary skill in the art would

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have known that it would have caused increased impregnation into the sponge, which would have been a desirable result. Therefore, the claimed invention would have been obvious.

Regarding claim 32, YARWOOD teaches that the slurry contains silicates such as sodium or potassium silicate (col. 5, lines 23-26).

Regarding claim 34, YARWOOD teaches the slurry may contain organic adhesives (col. 5, lines 33-38).

Regarding claim 38, see the discussion of claim 31.

Regarding claim 41, see the discussion of claim 30.

16. Claim 33 is rejected under 35 U.S.C. 103(a) as being unpatentable over YARWOOD et al. (US 4,075,303) in view of ANDERSSON (US 4,483,889) as applied to claims 30-32, 38 and 41 above, and further in view of YASUDA et al. (US 3,886,100).

YARWOOD as modified by ANDERSSON discloses a method for producing porous ceramic structures. Modified YARWOOD is silent to disclosing a surfactant mixed with the adhesive. YASUDA et al. discloses a method of manufacturing polymer particles cross-linked uniformly by impregnating a cross-linking agent into polymer particles. YASUDA et al. discloses that a surfactant is added to the impregnation solution in order to add the solution homogeneously to the polymer (col. 4, lines 13, 42-44). It would have been obvious to one of ordinary skill in the art to add a surfactant to the adhesive of modified YARWOOD to ensure that the adhesive would have been dispersed homogeneously during the impregnation as suggested by YASUDA.

17. Claim 35 is rejected under 35 U.S.C. 103(a) as being unpatentable over YARWOOD et al. (US 4,075,303) in view of ANDERSSON (US 4,483,889) as applied to claims 30-32, 38 and 41 above, and further in view of JIN (US 6,296,699 B1).

YARWOOD as modified by ANDERSSON discloses a method for producing porous ceramic structures. Modified YARWOOD is silent to disclosing either sodium silicofluoride or magnesium sulfate is mixed with the adhesive. JIN discloses that sodium silicofluoride is a known hardener for use with alkali metal silicates (col. 6, lines 67 – col. 7, lines 1-6). Since the adhesive in modified YARWOOD is sodium or potassium silicate, it would have been obvious to one of ordinary skill in the art that adding sodium silicofluoride would have added strength to the ceramic structure produced by modified YARWOOD. Therefore, the claimed invention would have been obvious.

18. Claim 33 is rejected under 35 U.S.C. 103(a) as being unpatentable over YARWOOD et al. (US 4,075,303) in view of ANDERSSON (US 4,483,889) as applied to claims 30-32, 38 and 41 above, and further in view of BOUTLE (US 4,157,424).

YARWOOD as modified by ANDERSSON discloses a method for producing porous ceramic structures. Modified YARWOOD is silent to mixing a water repellant with the adhesive. BOUTLE discloses a method for producing porous materials. BOUTLE discloses that a surface active agent may affect the ability of a porous body to

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become wetted by liquids (col. 4, lines 23-27). It would have been obvious to one of ordinary skill in the art to add water repellant to the adhesive mixture of modified YARWOOD in order to make the ceramic hydrophobic. This would produce a ceramic product that would be ideal for use in water. Therefore, the claimed invention would have been obvious.

19. Claim 37 is rejected under 35 U.S.C. 103(a) as being unpatentable over YARWOOD et al. (US 4,075,303) in view of ANDERSSON (US 4,483,889) as applied to claims 30-32, 38 and 41 above, and further in view of CROOKE et al. (US 4,332,753).

YARWOOD as modified by ANDERSSON discloses a method for producing porous ceramic structures. Modified YARWOOD is silent to mixing phosphate with the adhesive. CROOKE et al. discloses a method of making a porous refractory material. CROOKE discloses that a sponge is impregnated with a suspension of refractory material, then squeezed to remove excess suspension and finally allowed to dry (col. 1, lines 8-15). CROOKE et al. discloses that suitable sponge can be composed of polyurethane (col. 2, lines 14-16) as in modified YARWOOD. CROOKE et al. discloses that the impregnation suspension can have a phosphate additive to produce temporary or permanent bonds and impart desirable properties such as thixotropy, wetting ability, and mould resistance (col. 2, lines 22-26). It would have been obvious to one of ordinary skill in the art to add phosphate in order to improve the thixotropy, which is a desired property in YARWOOD (col. 5, lines 33-36).

Response to Arguments

20. Applicant's arguments with respect to claims 13-41 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

21. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

22. PALL (US 3,238,056) teaches a method of making porous material by impregnating a sponge with aluminum silicate.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CYNTHIA SZEWCZYK whose telephone number is (571)270-5130. The examiner can normally be reached on Monday through Thursday 7:30 am to 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on (571) 272-1189. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jason L Lazorcik/
Primary Examiner, Art Unit 1791

CS